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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/535,477	04/04/2006	Keisuke Itakura	81864.0061	7171

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EXAMINER	
SALVITTI, MICHAEL A	
ART UNIT	PAPER NUMBER
1796	

NOTIFICATION DATE	DELIVERY MODE
06/26/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/535,477	ITAKURA ET AL.	
	Examiner	Art Unit	
	MICHAEL A. SALVITTI	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 April 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *15-20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-20* are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/17/2005, 11/20/2006, 12/04/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Claims 15-20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 04/23/2009.

Applicant's election without traverse of claims 1-14 in the reply filed on 04/23/2009 is acknowledged.

Specification

The title is objected to because of the following informalities: "Deelectric" is a typo of "dielectric".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1: The parenthetical phrase in lines 6-7 renders the claim indefinite because it is unclear whether the parenthetical phrase is a limitation or exemplary embodiment of the claimed invention. See MPEP § 2173.05.

Regarding claim 2: The parenthetical phrase in lines 6-7 renders the claim indefinite because it is unclear whether the parenthetical phrase is a limitation or exemplary embodiment of the claimed invention. See MPEP § 2173.05.

Regarding claim 6: The parenthetical phrase in line 8 renders the claim indefinite because it is unclear whether the parenthetical phrase is a limitation or exemplary embodiment of the claimed invention. See MPEP § 2173.05.

Regarding claim 7: The parenthetical phrase in line 4 renders the claim indefinite because it is unclear whether the parenthetical phrase is a limitation or exemplary embodiment of the claimed invention. See MPEP § 2173.05.

Regarding claim 11: The parenthetical phrases in lines 3 and 4 render the claim indefinite because it is unclear whether the parenthetical phrase is a limitation or exemplary embodiment of the claimed invention. See MPEP § 2173.05.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by EP1262450 to *Takaya et al.* The English equivalent of EP1262450 (US 2002/0197461 to *Takaya*) is cited for translational purposes, and is hereinafter referred to as *Takaya '461.*

Regarding claim 1: *Takaya '461* teaches a composite dielectric material comprising a resin material and a dielectric ceramic powder (¶ [0020]). This powder is based on $BaO\text{-}R_2O3\text{-}TiO_2$, wherein R is neodynium (Nd) (¶ [0083]). The particle is described as close to a perfect sphere (¶ [0083]). The dielectric ceramic powder further comprisies a transition metal having at least two states of ionic valences less than 4 (manganese; ¶ [0083]).

Claims 2-4 are rejected under 35 U.S.C. 102(b) as being anticipated by EP1262450 to *Takaya et al.* (US 2002/0197461 to *Takaya*).

Regarding claims 2-4: *Takaya '461* teaches a composite dielectric material comprising a resin material and a dielectric ceramic powder (¶ [0020]). This powder is based on $BaO\text{-}R_2O3\text{-}TiO_2$, wherein R is neodynium (Nd) (¶ [0083]). The particle is described as close to a perfect sphere (¶ [0083]), and the application describes sphericities of 0.9 to 1.0 (¶ [0064]). The dielectric ceramic powder further comprisies a transition metal having at least two states of ionic valences less than 4 (manganese; ¶ [0083]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3, 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002/0132898 to *Takaya et al* (hereinafter referred to as *Takaya '898)* in view of EP1262450 to *Takaya et al*. (US 2002/0197461 to *Takaya)*.

Regarding claims 1 and 3: *Takaya '898* teaches a dielectric material comprising ceramic powder mixed with resin material (see abstract). The ceramic powder is spherical (¶ [0279]) and, based on $BaO\text{-}R_2O_3\text{-}TiO_2$ (¶ [0043]). "R" is Nd in ¶ [0254]). The material further comprises an oxide of a transition metal element having at least two states of ionic valences less than 4 (Mn; ¶ [0275]).

Takaya '898 is silent regarding whether the dielectric ceramics are spherical. *Takaya '461* teaches spherical ceramics as applied to polymer resins (¶ [0020]). *Takaya '898* and *Takaya '461* are analogous art, in that they are drawn to the same field of endeavor, namely creating polymeric resins comprising ceramic filler of barium/rare earth elements/titanium and manganese. At the time of the invention, it would have been obvious to a person having ordinary skill in the art to use spherical particles with the resin taught by *Takaya '898*, with the motivation of facilitiating the uniformity of the

dispersion, which *Takaya '461* teaches as an advantage of using spherical particles (¶ [0064]).

Regarding claim 12: *Takaya '898* teaches the composite dielectric material having electric resistivity of greater than 10^{12} ohm-cm or more (Table 10).

Regarding claim 13: *Takaya '898* teaches the content of dielectric ceramic powder is 10-70% based on volume of the resin material (see Table 3, samples 20-25).

Regarding claim 14: *Takaya '898* teaches polyvinyl benzyl ether compound as the resin material (see claim 1).

Claims 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP1262450 to *Takaya et al.* (US 2002/0197461 to *Takaya)*, in view of U.S. Patent No. 4,803,591 to *Miyashita et al.*

Regarding claim 6: *Takaya '461* teaches a composite dielectric material comprising resin (¶ [0020]) and a dielectric ceramic powder to be mixed with said resin material (¶ [0020]). The dielectric ceramic powder comprises manganese oxide (¶ [0083]).

Takaya '461 is silent regarding the specific surface area of the ceramic powder. However, the examiner is of the opinion that the powder has a specific surface area of 1.2 m^2/g or less for the following reason:

Miyashita teaches the following (col. 3, lines 1-11):

$$S_A = \frac{6}{D_A}$$

where the numeral 6 is a shape factor assuming all the particles being spherical, S_A is a specific surface area (m^2/g) measured by BET method developed by Brunauer, Emmett, and Teller[1] and is measured in the present invention, is a true density of barium titanate (g/cm^3), and D_A is a specific surface area diameter (μm).

[1] S. Brunauer et al.; J. Am. Chem. Soc. 60 309 (1938)

The invention of *Takaya '461* teaches particle sizes of 1-20 μm (¶ [0022]). Using *Miyashita*'s equation, the examiner calculates the surface area of the particles as being $6m^2/g$ (for 1 μm diameter) to 0.2 m^2/g (for 20 μm diameter). In the case where the claimed ranges overlap or lie inside ranges disclosed by the prior art a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191USPQ 90 (CCPA 1976). See MPEP § 2144.05. At the time of the invention, it would have been obvious to a person having ordinary skill in the art to optimize the surface area of the invention taught by *Takaya '461*, with the motivation of optimizing the dielectric constant depending on the temperature (*Miyashita* col. 3, lines 10-16).

Regarding claims 7-8: *Takaya '461* teaches 0.1 mol% manganese oxide (¶ [0083]). The examiner calculates this to be 0.05% based on weight (MnO_2 is 8.7 parts of the composition of 16,935 parts by total weight, based upon multiplication of molar ratios times molecular mass, g/mol of each component).

Regarding claim 9: *Takaya '461* teaches a sphericity of 0.9 to 1 (¶ [0064]).

Regarding claim 10: *Takaya '461* teaches the mean particle size of 2.5 μm (¶ [0084]).

Regarding claim 11: *Takaya '461* teaches a Q value of 458 at 2 GHz (Table 2).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP1262450 to *Takaya et al.* (US 2002/0197461 to *Takaya)*, as applied to claim 2 above, in view of U.S. Patent No. 5,650,368 to *Tateishi et al.*

Regarding claim 5: *Takaya '461* teaches the composite dielectric material containing ceramic power and resin as set forth above.

Takaya '461 is silent regarding the dielectric ceramic powder having a composition of BaO 6.67-21.67 mol%, R2O3 6.67-26.67 mol% and TiO2 61.66-76.66 mol%. *Tateishi* teaches a dielectric ceramic composition wherein Ba is 16.75-23.75 mol%, rare earth elements such as Nd are 16.75-23.75 mol%, and a group IV element such as titanium is 67-71.66 mol% (see *Tateishi* abstract). At the time of the invention, it would have been obvious to a person having ordinary skill in the art to substitute the ceramic taught by *Tateishi* into the invention of *Takaya '461*, with the motivation of obtaining a dielectric material of high dielectric constant, which allows for a reliable small capacitor with a large capacitance (*Tateishi* col. 1, lines 55-64).

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 4,540,676 to *Chu et al.* discloses ceramic particle composites with similar ratios and materials as instant claims 1 and 2.

JP 2000-349784 to *Takaya et al.* (US 2003/0030994) discloses composite dielectric materials comprising a resin and similar ceramic materials.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL A. SALVITTI whose telephone number is (571)270-7341. The examiner can normally be reached on Monday-Thursday 8AM-7PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo/
Supervisory Patent Examiner, Art Unit 1796

/M. A. S./
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